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10/518,270

12/16/2004

David Keith Roberts

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PHILIPS INTELLECTUAL PROPERTY & STANDARDS

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BRIARCLIFF MANOR, NY 10510

EXAMINER

LOUIE, OSCAR A

ART UNIT

PAPER NUMBER

2112

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
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3 MONTHS

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

# Office Action Summary

Application No.

10/518,270

Applicant(s)

ROBERTS ET AL.

Examiner

Oscar A. Louie

Art Unit

2112

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 12/16/2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

This first non-final action is in response to the original filing of 12/16/2004. Claims 1-16 are pending and have been considered as follows.

#### ***Claim Objections***

1. Claims 12, 14, and 16 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The examiner notes that claim 14 could be made clearer by amending the preamble to read "computer-executable instructions to embed a signature" or "computer-executable instructions for embedding a signature." The examiner further notes that if claim 14 is amended as an independent claim, omitting the portion "according to the method of claim 1 comprising" is required since the "method of claim 1" is already cited as part of claim 14. Note that claim 16 "use of the method according to claim 1 in a surveillance camera or security camera or digital image camera or digital video camera or a medical imaging system" is an intended use of the invention. It is further noted by the examiner that claims 12, 14, and 16 are treated as independent claims in the rejections below.

Art Unit: 2112

***Claim Rejections - 35 USC § 102***

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-10 & 12-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Wolfgang (WO98/11492).

Claims 1, 12, & 14:

Wolfgang discloses,

- “A watermark 50 is incorporated onto an original image 52 by a watermarking algorithm 54 to produce a watermarked original image 56 as shown by the block diagram of a watermarked image generator 46 in FIG. 2. There are numerous techniques for providing watermark 50. For example, visually imperceptible watermarks can be generated by a checksum technique where the watermark is a function of the pixel values of the original image 52, and the checksum watermark is then incorporated onto the least significant bit (LSB) plane of the image. It is understood that the present invention contemplates any watermarking algorithm 54, conventional or otherwise, for providing and incorporating watermark 50 onto original image 52 to create watermarked original image 56.” (i.e. “forming a signature based on a first portion of a frame of said audio-visual signal”; “embedding the signature in said first portion and/or at least a second portion of said frame of said audio-visual signal”) [page 8 lines 21-30].

Art Unit: 2112

Claims 2, 13, & 15:

Wolfgang discloses,

- “In the above equations,  $i$  and  $j$  are the pixel row and column of the block. The cross-correlation values are a function of  $\alpha$  and  $\beta$ , which are horizontal and vertical offsets respectively, and illustratively can both be zero. In addition to any horizontal and vertical alignment of the suspect image, it may also be necessary to rotate the suspect image, which can be accomplished by any technique, such as a least squares method. It may also be necessary to scale the suspect image, which similarly can be accomplished by any known technique.” (i.e. “portions are patterns of consecutive horizontal lines of said audio-visual signal, said patterns having fewer lines than the entire audio-visual signal”) [page 11 lines 8-14].

Claim 3:

Wolfgang discloses,

- “This process is repeated until the entire image is marked. The total number of watermark blocks ( $w$ ) in a watermark 50 is image dependent. It is also possible that each watermark block can be different, that is, a first portion of the watermark 50 can have a first range of values, e.g., bipolar, and a second portion of the watermark 50 can have a second range of values, e.g., unipolar.” (i.e. “steps of forming and embedding are repeated until a signature has been embedded for all regions of said frame”) [page 9 lines 24-28].

Art Unit: 2112

Claim 4:

Wolfgang discloses,

- “This process is repeated until the entire image is marked. The total number of watermark blocks (w) in a watermark 50 is image dependent. It is also possible that each watermark block can be different, that is, a first portion of the watermark 50 can have a first range of values, e.g., bipolar, and a second portion of the watermark 50 can have a second range of values, e.g., unipolar.” (i.e. “first portion of said audio-visual is a first field comprising a slice of at least one consecutive line of said lines of said frame of said audio-visual signal and said second portion is a second field comprising a slice of at least one consecutive line of said lines of said frame of said audio-visual signal.”) [page 9 lines 24-28].

Claim 5:

Wolfgang discloses,

- “In the above equations, i and j are the pixel row and column of the block. The cross-correlation values are a function of .alpha. and .beta. which are horizontal and vertical offsets respectively, and illustratively can both be zero. In addition to any horizontal and vertical alignment of the suspect image, it may also be necessary to rotate the suspect image, which can be accomplished by any technique, such as a least squares method. It may also be necessary to scale the suspect image, which similarly can be accomplished by any known technique.” (i.e. “audio-visual signal is interlaced”) [page 11 lines 8-14].

Art Unit: 2112

- "This process is repeated until the entire image is marked. The total number of watermark blocks (w) in a watermark 50 is image dependent. It is also possible that each watermark block can be different, that is, a first portion of the watermark 50 can have a first range of values, e.g., bipolar, and a second portion of the watermark 50 can have a second range of values, e.g., unipolar." (i.e. "said first field comprises all even or odd lines and said second field comprises all respectively remaining even or odd lines") [page 9 lines 24-28].

Claim 6:

Wolfgang discloses,

- "In the above equations, i and j are the pixel row and column of the block. The cross-correlation values are a function of .alpha. and .beta. which are horizontal and vertical offsets respectively, and illustratively can both be zero. In addition to any horizontal and vertical alignment of the suspect image, it may also be necessary to rotate the suspect image, which can be accomplished by any technique, such as a least squares method. It may also be necessary to scale the suspect image, which similarly can be accomplished by any known technique." (i.e. "audio-visual signal is non-interlaced") [page 11 lines 8-14].
- "This process is repeated until the entire image is marked. The total number of watermark blocks (w) in a watermark 50 is image dependent. It is also possible that each watermark block can be different, that is, a first portion of the watermark 50 can have a first range of values, e.g., bipolar, and a second portion of the watermark 50 can have a second range of values, e.g., unipolar." (i.e. "said portions being slices of

Art Unit: 2112

at least one consecutive line of said lines of said audio-visual signal and said first portion and said slices comprising different consecutive lines of said audio-visual signal”) [page 9 lines 24-28].

Claim 7:

Wolfgang discloses,

- “A watermark 50 is incorporated onto an original image 52 by a watermarking algorithm 54 to produce a watermarked original image 56 as shown by the block diagram of a watermarked image generator 46 in FIG. 2. There are numerous techniques for providing watermark 50. For example, visually imperceptible watermarks can be generated by a checksum technique where the watermark is a function of the pixel values of the original image 52, and the checksum watermark is then incorporated onto the least significant bit (LSB) plane of the image. It is understood that the present invention contemplates any watermarking algorithm 54, conventional or otherwise, for providing and incorporating watermark 50 onto original image 52 to create watermarked original image 56.” (i.e. “embedding the signature being characterized by embedding the signature as a watermark”) [page 8 lines 21-30].

Claim 8:

Wolfgang discloses,

- “Illustrative embodiments of the present invention provide a watermark based on a modified m-sequence. A linear feedback shift register with  $n$  stages can form pseudo-random binary sequences with periods as large as  $2^n - 1$ ; m-sequences achieve



Art Unit: 2112

this maximum period and have excellent randomness and autocorrelation properties.

An extended m-sequence is created by appending a zero to the end of the longest run of zeros in an m-sequence. Two types of sequences may be formed from an m-sequence: unipolar and bipolar. The elements of a bipolar sequence are  $[-1, 1]$  and the elements of a unipolar sequence are  $[0, 1]$ . The values of the watermark correspond to changes in the values of an original signal or a suspect signal from incorporation of the watermark.” (i.e. “watermark is embedded as a spread spectrum watermark”)

[page 8 lines 31 - page 9 lines 1-6].

Claim 9:

Wolfgang discloses,

- “Forming a watermark based on a random bipolar sequence such as a bipolar m-sequence or extended m-sequence results in a bipolar watermark that when added to the original image does not change the average brightness of the pixels in the image plane to which the bipolar watermark is added. Thus, multiple bipolar watermarks can overlap each other without changing the average brightness of the original image. Successive incorporations of bipolar watermarks thus can be used, for example, to support tracing the chain of custody of an image.” (i.e. “watermark embedded in a different portion of said frame than the portion of said frame for which said signature is generated”) [page 9 lines 7-13].

Art Unit: 2112

Claim 10:

Wolfgang discloses,

- "A watermark 50 is incorporated onto an original image 52 by a watermarking algorithm 54 to produce a watermarked original image 56 as shown by the block diagram of a watermarked image generator 46 in FIG. 2. There are numerous techniques for providing watermark 50. For example, visually imperceptible watermarks can be generated by a checksum technique where the watermark is a function of the pixel values of the original image 52, and the checksum watermark is then incorporated onto the least significant bit (LSB) plane of the image. It is understood that the present invention contemplates any watermarking algorithm 54, conventional or otherwise, for providing and incorporating watermark 50 onto original image 52 to create watermarked original image 56." (i.e. "embedding the signature in a subsequent portion") [page 8 lines 21-30].

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wolfgang (WO98/11492) in view of Girod (US-5809139-A).

Art Unit: 2112

## Claim 11:

Wolfgang discloses the method as in claim 1 above but does not disclose, "forming and embedding said signature are performed in real-time," however, Girod discloses, "Many digital video applications are "constant bit rate" applications, which do not tolerate increases in the bit rate of the transmitted bitstream. Even in those applications which are not restricted to a constant bit rate, unnecessary increases in the bit rate should be avoided, so as to preserve the real-time decodability of the video signal when transmitted over a channel having a given bandwidth. Thus, it is desirable that the addition of the watermark does not increase the bit rate of the video signal" [column 1 lines 42-50]. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the application, to form and embed a signature in real-time in order to maintain a constant bit rate providing a better quality of service.

5. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wolfgang (WO98/11492).

## Claim 16:

Wolfgang discloses, "The growth of the Internet and networked multimedia systems has magnified the need for copyright protection of information, including image data. Copyright owners need tools for identification content authentication, that is, identification of copies of the protected work that may have been forged, filtered, or otherwise modified, as well as ownership authentication. It may also be necessary to determine a work's chain of custody and to verify who viewed or altered the work, including when such actions occurred" [Background and Summary of the Invention]. Thus, it would have been obvious to one having ordinary skill in the art at the

Art Unit: 2112

time of the applicant's invention to use the claimed invention in a "surveillance camera or security camera or digital image camera or digital video camera or a medical imaging system," for the reasons of protecting copyrights and image data integrity.

### *Conclusion*

1. The prior art made of record and not relied upon is considered pertinent to the applicant's disclosure.

- a. Warren (US-5963909-A)
- b. Hirai (US-6850619-B1)
- c. Moskowitz (US-5822432-A)

2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Oscar Louie whose telephone number is 571-270-1684. The examiner can normally be reached Monday through Thursday from 7:30 AM to 4:00 PM.

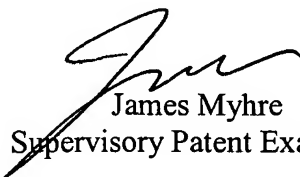
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Myhre, can be reached at 571-270-1065. The fax phone number for Formal or Official faxes to Technology Center 2100 is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you

Art Unit: 2112

would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

OAL  
12/18/2006

  
James Myhre  
Supervisory Patent Examiner